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SPIRIT



FOOD FOR THE FUTURE
Will Native Desert Plants
One Day Feed the World?

Richard Felger's LOAVES AND FISHES

This internationally respected ethnobotanist envisions a world nourished by mesquite, eelgrass and other 'new food crops.'

We

parked the dusty Chevy pickup under the lone tree in the clearing. It provided no immediate protection from the desert sun, but it would shade the truck in the afternoon, when it mattered. Felger hurried out of the cab and went into what I had come to think of as his Groucho Marx routine. Bent precipitously at the waist, he remained stooped over while zigzagging across the hard-baked earth of the Sonoran Desert, looking for plants to pop into the Hefty garbage bag in his left hand. Our putative destination was a canyon about half a mile away, but I knew from our first few days in the field in northern Mexico that Felger would move at a sporadic, plant-to-plant pace. Sure

enough, within seconds he had knelt beside a minuscule grass that most people would have heedlessly tropped upon; his posture suggested his attitude toward his beloved desert flora.

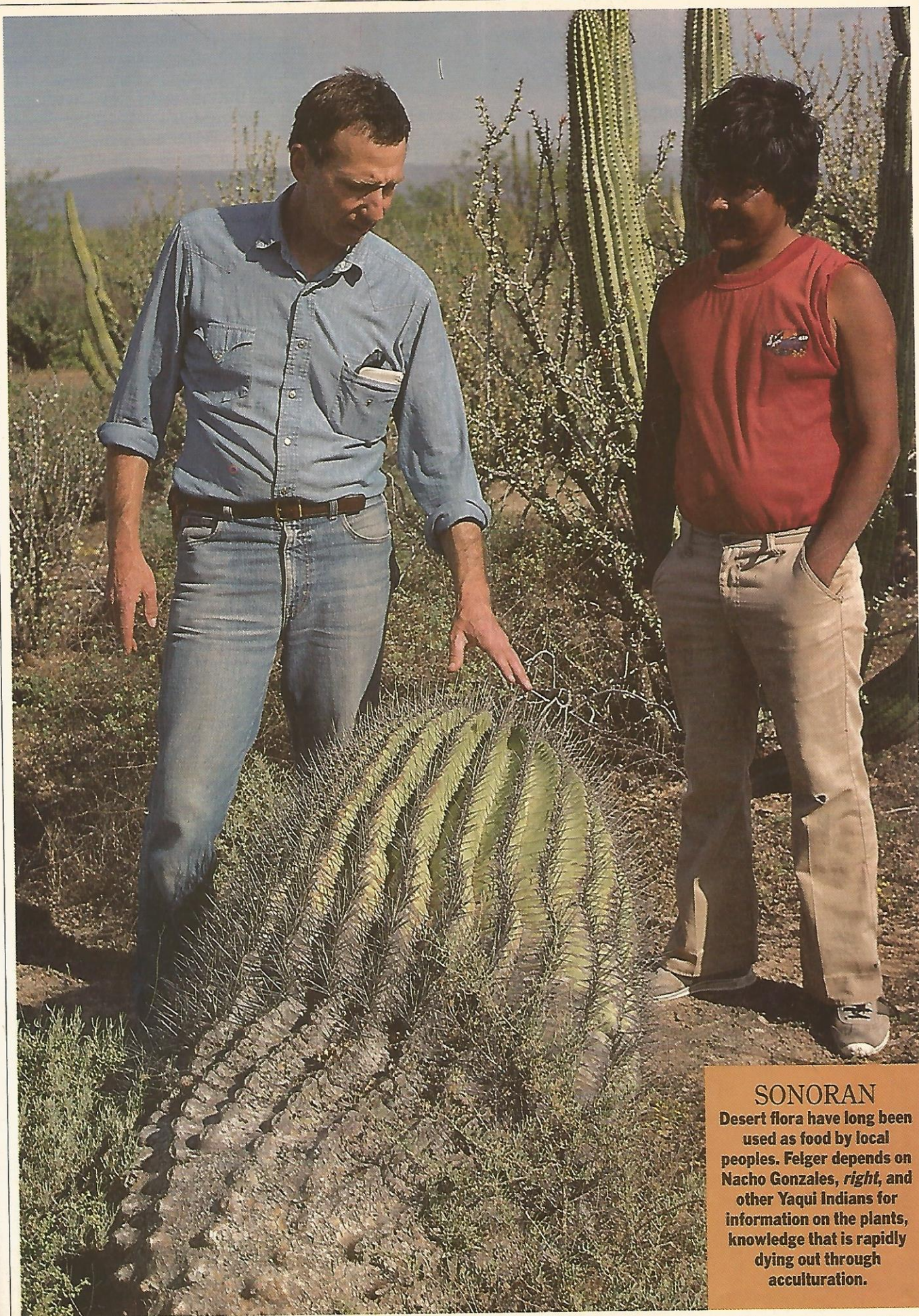
Dr. Richard Felger sees more in the desert than most people do. Where they see forbidding desolation, he sees a rich and varied ecosystem. Where they see a mass of strange cacti and scrubby bushes and grasses, he sees a gathering of familiar faces with names and quirks and histories. Most of all, where they see a hot and dry present to be hastily left in the past, Felger sees the fertile possibilities of the future.

Felger is one of the nation's leading ethnobotanists. He publishes a steady stream of books and papers and serves on the editorial boards of the *Journal of Ethnobiology* and *Economic Botany*. He also holds research positions with the University of Arizona and the Ecology Institute of Mexico. However, despite his considerable scholarly credentials, Felger is anything but a faculty-lounge lizard. He

chafes under the restraints of academia and relishes getting out into the field, where he spends most of his time. His peripatetic nature has taken him all over the globe, to places such as India, Kenya, Israel, South America and the Caribbean. But his specialty—and his passion—is the Sonoran Desert. Naturally, he lives in the Sonoran Desert, occupying (occasionally) a house in Tucson that is part desert botanical garden and part museum. From there he roams Arizona and Mexico, as he has for more than two decades, gathering the knowledge that has made him a prominent figure in ethnobotany.

Ethnobotany is a young discipline that appeared around the turn of the century but has come into its own only in the last ten years. It lies at the confluence of botany and anthropology and involves gathering information about plants and their uses from native peoples, usually isolated cultures that have lived in harmony with their environments for hundreds or even thousands of years. At first glance

STORY
PHOTOS *By Bob Devine*



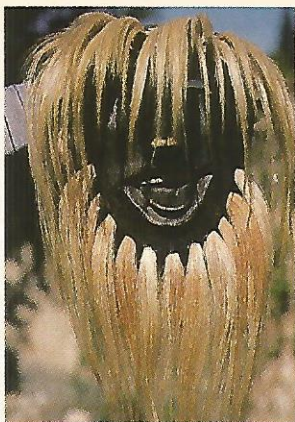
SONORAN

Desert flora have long been used as food by local peoples. Felger depends on Nacho Gonzales, *right*, and other Yaqui Indians for information on the plants, knowledge that is rapidly dying out through acculturation.

ethnobotany might appear to be just another addition to the long list of esoteric fields whose utility is hazy, if not indiscernible, but to dismiss its findings as academic arcana would be a mistake the world can ill afford.

The most immediately significant research in ethnobotany is in the area of new food crops, a specialty of Felger's. And the significance goes beyond the need for more food in a world that has many hungry people. As Felger puts it, "I'm not only talking about more food, but crops better adapted to the environment. Right now we're changing the environment to fit a narrow range of plants. My basic philosophy is to change the crops to fit the environment. We'd use fewer pesticides, less energy, less water." Ethnobotany is often the best avenue to ecologically sound new crops because indigenous cultures know about the plants native to their regions, plants that have adapted naturally to those regions over time and generally don't need as much irrigation, fertilizer or other foreign aid. Ethnobotanists can learn about promising native food plants and then figure ways in which to adapt them for modern agriculture.

The research of Felger and others in his field is of particular importance to the Southwest, where increasing desertification and population pressures have created an urgent need to conserve water. Instead of building enormous, costly and environmen-



YAQUI
ceremonial masks (above) are part of Felger's impressive personal archive of Indian artifacts. The collection has taken more than two decades to accumulate, and attests to Felger's passion for his work and his chosen environment (below). Where most people see a hot and dry present to be hastily left in the past, Felger sees the fertile possibilities of the future.

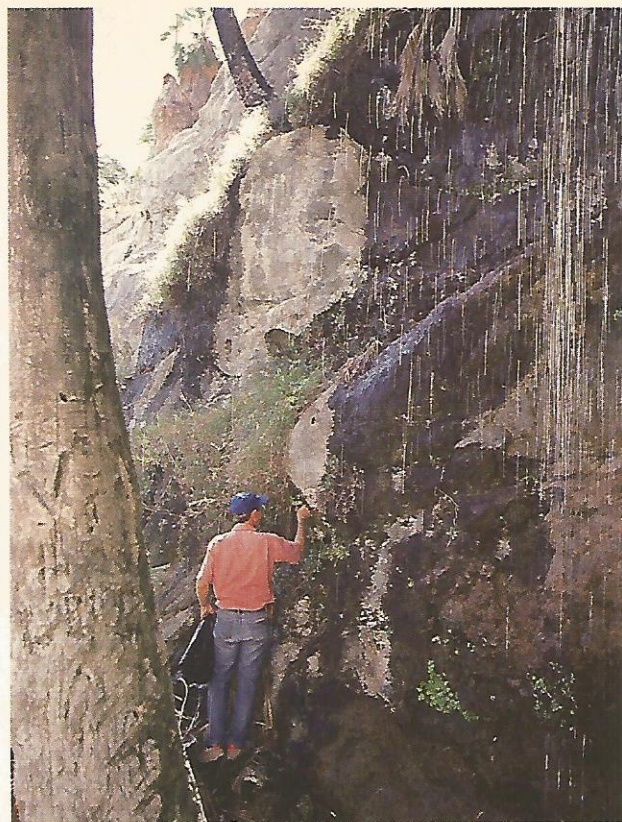
tally destructive water projects designed in part to provide irrigation for crops that were meant for other climates, food plants (or nonfood plants, for that matter) that have long thrived under arid conditions could be developed. It's not as if the choices weren't there. Felger and some colleagues have estimated that local peoples used at least 450 species of Sonoran Desert flora as food.

All this talk of earthshaking discoveries and primitive societies tends to bathe ethnobotany in a romantic light; one can almost see the tanned face beneath the pith helmet as our intrepid seeker of wisdom treks to the ends of the earth and encounters exotic natives clad in animal hides. Reality is better represented by Nacho Gonzales, who has an orange T-shirt with "Guaymas" written across the back. Gonzales is a Yaqui Indian who is Felger's primary contact in the little Mexican town of Guásimas. Gonzales has provided some information on the plants of the area, but his main contribution is to help Felger make contact with the older Yaquis in the area who still have firsthand knowledge of the traditional Yaqui names and uses of desert plants. Such knowledge is rapidly dying out through acculturation, and Felger has often been told by elderly Indians that he is the only person, Indian or Anglo, who has asked about their plant lore.



Last February Felger and I bounced and fishtailed over the dirt road into Guásimas early one afternoon, the sun high overhead on the prowl for any excess moisture that might have escaped it that morning. We dropped off an old man who had thumbed a ride—ever alert, Felger had asked him about the area's plants—and eased the pickup through the decrepit town to Gonzales' house. Gonzales saw us pull up and he came across the littered compound, sidestepping children and chickens, to join us at the low barbed-wire fence for fifteen or twenty minutes of idle chitchat—in Spanish, which Felger speaks fluently. Felger seemed impatient with this drawn-out amenity, but it's an integral part of the process and he reined in his restless energy.

After our thorough examination of the weather and such, Gonzales led us on foot through town in search of more knowledgeable informants. A chance encounter with a young friend resulted in a half-hour conversation, much of it devoted to Gonzales and his friend trying, unsuccessfully, to name some plant that Felger didn't already know. Finally they gave up, and Gonzales, probably hoping to stump Felger, took us to the house of an older man who lived nearby. Felger seemed oblivious to the one-room shack's dirt floor, the runny-nosed infant crawling around his feet and the incongruous Mexican soap opera blaring from a battered little black-and-white television set; he'd been there before, in towns and villages all over Arizona and Mexico. Felger questioned the man, discovering within minutes that the old Yaqui didn't know enough to be of much help. His patience fraying at the edges, Felger extricated us rapidly and decided to collect plants for a while before continuing his laborious detective work. Later that afternoon, Gonzales took us to some more potential informants, but nothing came of it. The day had been frustrating for



LA HUERTA
has for centuries been an important water site. The people in the nearby desert have thrived on a natural spring (above) that runs out of the desert cliff. Felger explores this and other parts of the Sonoran Desert in his dusty pickup truck (below), a vehicle that doubles as a makeshift lab for pressing and preserving plants when he's out in the field.



Felger, yet he arranged another meeting with Gonzales. Maybe next time. . . .

This is the path of the ethnobotanist. It is often full of dead ends, detours and long, uphill grades. Still, it is often the shortest route to the information that Felger seeks. Originally more of a pure botanist, Felger, now forty-five, added the "ethno" to his job description early in his career when he encountered the Seri Indians, an isolated race of some five hundred individuals who live in a few villages along the Gulf of California. "I was in college," recalls Felger, "studying plants of the Gulf, and I realized that the Seris knew a hell of a lot more about them than I did." Little did Felger know at the time that he would be involved on and off with the Seris to this day, and that he would become an au-

thority on their culture as well as their botany. In fact, this month the University of Arizona Press is publishing a book on the Seris called *People of the Desert and Sea*, which Felger coauthored.

Lavish though it may be, however, the book is hardly the high point of Felger's work with the Seris. That position belongs to his documentation of their use of eelgrass as food, culminating in a seminal paper published in 1973. Eelgrass is a grain that compares favorably with major grains in nutritional value. What makes it special is that it grows in the ocean. In seawater. It is the only known grain from an ocean plant that is used as a human food, and it exists in great masses along the coasts of North America and Eurasia. The potential is staggering,

and research is currently being done to develop eelgrass and other crops that can grow on or in saltwater. The case of eelgrass is a perfect example of what Felger sees as his function: "My role is to discover something and write about it. Someone else will finish it if I can get a clear message to them."

That's his ideal vision of the order of —continued on p.134

EELGRASS

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things. But Felger feels that some members of the cast aren't playing their parts very well. He is disappointed by what he sees as the paucity of funding in the United States, especially the long-term funding that he believes is necessary for optimum research on new food crops. Felger says that the powers that be "want a guaranteed product. If they can't see a product two or three years down the road, they're not interested." According to Felger, there are a number of reasons for the lack of funding. "For one thing, America doesn't need food. Also, we're coming from a background where energy, water and food were cheap." These are Felger's sober-minded assessments of the resistance in America to his area of research. When he gets heated about the subject, he just shakes his head and says, "There's an aversion [to new food crops research] that's not rational, that goes deeper. I think it's genetic."

In a sunnier mood, Felger allowed that things are looking up, that more money is beginning to flow into the right projects. Despite the hindrances, Felger expects great things of his and others' ethnobotanical work. For example, he believes that the foothill palo verde, a Sonoran Desert plant used for food by the Seris, is the "legume of the future." From the Cocopah Indians of the Colorado River Delta has come knowledge of palmer saltgrass, which Felger thinks could become an important grain. Felger places the greatest faith in mesquite, which he predicts will become one of the world's major crops, joining vital grains such as wheat and rice, by the year 2000. Perhaps we can look forward to mesquite-broiled mesquite.

Felger's research is part of a truly noble scientific endeavor; developing new food crops that also blend harmoniously with the environment is more valuable, if less glamorous, than concocting new cologne fragrances. Yet Felger's satisfaction in his work seems to stem more from the process than from the result. He enjoys hiking about the desert, garbage bag at the ready. He enjoys being on intimate terms with the Seris, the Yaquis and the other Indian peoples from whom he has learned so much. He even enjoys—to an extent—staying up until one in the morning pressing plants,

MESQUITE

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hurrying to preserve them before they dry out. "At least pressing plants is more fun than sitting in an office," he said late one night in Mexico, showing his dry smile.

When pressed about the significance of his work, Felger allows that he has as much feeling as the next guy for the starving people of our planet, but a more complex concern also emerges. Felger believes that quality of life demands more than a full stomach, and that one of the essential ingredients is a clean, natural environment. His strong feelings on the subject were made quite clear by the string of heartfelt epithets he released when we passed a sprawling trailer park that had intruded upon a prime stretch of desert. His intense dislike of such aspects of civilization explains why he is interested only in those crops that won't disfigure nature. Felger also believes that more food will raise the standard of living, and that that in turn will lead to family planning and population control, taking some of the burden off Mother Nature.

Whatever his motivations—and they are probably as complicated as he is—the fact that Felger is zealous about his work is indisputable. I attempted to go running with him one morning, but before we'd gone a hundred feet he veered into the bushes and pounced on some plant. Driving was the same. Several times he suddenly pulled off the road and trotted back after some eye-catching bit of flora. His relentless search seemed almost instinctive.

Perhaps we should think of Felger in terms dearer to his heart, viewing him as a part of the ecosystem he cherishes. His ecological niche is to collect and analyze botanical information that will protect his habitat, the desert. He is well adapted to fill the niche and goes about his task in the same way a hummingbird flits about pollinating certain desert flowers. Felger's work is clearly integral, but perhaps words such as "purpose" and "significance" are only the feeble attempts of human civilization to name things that are beyond naming. ♣

Bob Devine is a writer based in Denver. Richard Felger's new book is People of the Desert and Sea (University of Arizona Press, \$65).